Example 47: Efficiency of sun visors

Subject: Mathematics: analysis and approaches and mathematics: applications and interpretation
Paper component: Internal assessment, standard level (SL) and higher level (HL)

Assessment

Criterion	A	B	C	D	E (SL)	E (HL)	Total (SL)	Total (HL)
Achievement level awarded	3	3	3	1	4	3	14	13
Maximum possible achievement level	4	4	3	3	6	6	20	20

Comments

Criterion	Comments
A Presentation	The exploration has a clear aim and is well organized. It is not always coherent, with diagrams in line with or close to the text so that the reader has to scroll up and down. The diagram on page 11 needed to be accompanied by some explanations.
B Mathematical communication	The candidate used many forms of mathematical communication but there were a number of slips, which cumulatively do not justify the top mark. For example, axes on graphs are not always labelled, sometimes suffixes are not appropriately used and $d\phi$ is missing in double integrals.
C Personal engagement	The candidate demonstrates authentic personal engagement by investigating a real-life situation from different perspectives and also using new mathematics.
D Reflection	There is some ongoing reflection, but too many missed opportunities to reflect meaningfully and critically are missed. For example, in the first part the candidate does not consider the fact that the visor can actually be rotated around C. In the second part, the candidate does not mention that in reality there are two sun visors and not one that spans across the windscreen. There is also no justification given for using a reasonable degree of accuracy.
E Use of mathematics SL	
E Use of mathematics HL	The mathematics used is relevant and in parts beyond the curriculum content. The candidate shows some understanding and the mathematics is mostly correct. The lack of use of the absolute value on page 3 is an error, which is corrected on the next line. On page 5 the candidate should have stated the rules being used in going from one step to the next. More explanations should have accompanied the work on page 8. Double integrals are not part of the syllabus and some explanation is required when using them to address the target audience. On page 20 there is an error in the integral. Once more this is corrected on the next line.
General comments	